Greenland Sea and Barents Sea of northern Europe (Norway and Greenland (Denmark)); Baffin Bay, which separates Canada and Greenland, through most of the Canadian Arctic archipelago and the Canadian Beaufort Sea; and in the Chukchi and Beaufort Seas located west and north of Alaska.

Over most of their range, polar bears remain on the sea ice year-round or spend only short periods on land. However, some polar bear populations occur in seasonally ice-free environs and use land habitats for varying portions of the year. In the Chukchi Sea and Beaufort Sea areas of Alaska and northwestern Canada, for example, less than 10 percent of the polar bear locations obtained via radio telemetry were on land (Amstrup 2000, p. 137; Amstrup, USGS, unpublished data); the majority of land locations were bears occupying maternal dens during the winter. A similar pattern was found in East Greenland (Wiig et al. 2003, p. 511). In the absence of ice during the summer season, some populations of polar bears in eastern Canada and Hudson Bay remain on land for extended periods of time until ice again forms and provides a platform for them to move to sea. Similarly, in the Barents Sea, a portion of the population is spending greater amounts of time on land.

Although polar bears are generally limited to areas where the sea is ice-covered for much of the year, they are not evenly distributed throughout their range on sea ice. They show a preference for certain sea ice characteristics, concentrations, and specific sea ice features (Stirling et al. 1993, pp. 18–22; Arthur et al. 1996, p. 223; Ferguson et al. 2000a, p. 1,125; Ferguson et al. 2000b, pp. 770–771; Mauritzen et al. 2001, p. 1,711; Durner et al. 2004, pp. 18–19; Durner et al. 2006, p. pp. 34–35; Durner et al. 2007, pp. 17 and 19). Sea-ice habitat quality varies temporally as well as geographically (Ferguson et al. 1997, p. 1,592; Ferguson et al. 1998, pp. 1,088–1,089; Ferguson et al.2000a, p. 1,124; Ferguson et al.2000b, pp. 770–771; Amstrup et al. 2000b, p. 962). Polar bears show a preference for sea ice located over and near the continental shelf (Derocher et al. 2004, p. 164; Durner et al. 2004, p. 18–19; Durner et al. 2007, p. 19), likely due to higher biological productivity in these areas (Dunton et al. 2005, pp. 3,467–3,468) and greater accessibility to prey in near-shore shear zones and polynyas (areas of open sea surrounded by ice) compared to deep-water regions in the central polar basin (Stirling 1997, pp. 12–14). Bears are most abundant near the shore in shallow-water areas, and also in other areas where currents and ocean upwelling increase marine productivity and serve to keep the ice cover from becoming too consolidated in winter (Stirling and Smith 1975, p. 132; Stirling et al. 1981, p. 49; Amstrup and DeMaster 1988, p. 44; Stirling 1990, pp. 226–227; Stirling and Øritsland 1995, p. 2,607; Amstrup et al. 2000b, p. 960).

Polar bear distribution in most areas varies seasonally with the seasonal extent of sea ice cover and availability of prey. The seasonal movement patterns of polar bears emphasize the role of sea ice in their life cycle. In Alaska in the winter, sea ice may extend 400 kilometers (km) (248 miles (mi)) south of the Bering Strait, and polar bears will extend their range to the southernmost proximity of the ice (Ray 1971, p. 13). Sea ice disappears from the Bering Sea and is greatly reduced in the Chukchi Sea in the summer, and polar bears occupying these areas move as much as 1,000 km (621 mi) to stay with the pack ice (Garner et al. 1990, p. 222; Garner et al. 1994, pp. 407–408). Throughout the polar basin during the summer, polar bears generally concentrate along the edge of or into the adjacent persistent pack ice. Significant northerly and southerly movements of polar bears appear to depend on seasonal melting and refreezing of ice (Amstrup 2000, p. 142). In other areas, for example, when the sea ice melts in Hudson Bay, James Bay, Davis Strait, Baffin Bay, and some portions of the Barents Sea, polar bears remain on land for up to 4 or 5 months while they wait for winter and new ice to form (Jonkel et al. 1976, pp. 13–22; Schweinsburg 1979, pp. 165, 167; Prevett and Kolenosky 1982, pp. 934–935; Schweinsburg and Lee 1982, p. 510; Ferguson et al. 1997, p. 1,592; Lunn et al. 1997, p. 235; Mauritzen et al. 2001, p. 1,710).

In areas where sea ice cover and character are seasonally dynamic, a large multi-year home range, of which only a portion may be used in any one season or year, is an important part of the polar bear life history strategy. In other regions, where ice is less dynamic, home ranges are smaller and less variable (Ferguson et al. 2001, pp.51–52). Data from telemetry studies of adult female polar bears show that they do not wander aimlessly on the ice, nor are they carried passively with the ocean currents as previously thought (Pedersen 1945 cited in Amstrup 2003, p. 587). Results show strong fidelity to activity areas that are used over multiple years (Ferguson et al. 1997, p. 1,589). All areas within an activity area are not used each year.

The distribution patterns of some polar bear populations during the open water and early fall seasons have changed in recent years. In the Beaufort Sea, for example, greater numbers of polar bears are being found on shore than recorded at any previous time (Schliebe et al. 2006b, p. 559). In Baffin Bay, Davis Strait, western Hudson Bay and other areas of Canada, Inuit hunters are reporting an increase in the numbers of bears present on land during summer and fall (Dowsley and Taylor 2005, p. 2; Dowsley 2005, p. 2). The exact reasons for these changes may involve a number of factors, including changes in sea ice (Stirling and Parkinson 2006, p. 272).

Food Habits

Polar bears are carnivorous, and a top predator of the Arctic marine ecosystem. Polar bears prey heavily throughout their range on ice-dependent seals (frequently referred to as ''ice seals''), principally ringed seals (*Phoca hispida*), and, to a lesser extent, bearded seals (*Erignathus barbatus)*. In some locales, other seal species are taken. On average, an adult polar bear needs approximately 2 kg (4.4 lbs) of seal fat per day to survive (Best 1985, p. 1035). Sufficient nutrition is critical and may be obtained and stored as fat when prey is abundant.

Although seals are their primary prey, polar bears occasionally take much larger animals such as walruses (*Odobenus rosmarus*), narwhal (*Monodon monoceros*), and belugas (*Delphinapterus leucas*) (Kiliaan and Stirling 1978, p. 199; Smith 1980, p. 2,206; Smith 1985, pp. 72–73; Lowry et al. 1987, p. 141; Calvert and Stirling 1990, p. 352; Smith and Sjare 1990, p. 99). In some areas and under some conditions, prey other than seals or carrion may be quite important to polar bear sustenance as short-term supplemental forms of nutrition. Stirling and Øritsland (1995, p. 2,609) suggested that in areas where ringed seal populations were reduced, other prey species were being substituted. Like other ursids, polar bears will eat human garbage (Lunn and Stirling 1985, p. 2,295), and when confined to land for long periods, they will consume coastal marine and terrestrial plants and other terrestrial foods (Russell 1975, p. 122; Derocher et al. 1993, p. 252); however the significance of such other terrestrial foods to the long-term welfare of polar bears may be limited (Lunn and Stirling 1985, p. 2,296; Ramsay and Hobson 1991, p. 600; Derocher et al. 2004, p. 169) as further expanded under the section entitled ''Adaptation'' below.